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ABSTRACT

The Alaska Rural Systemic Initiative (AKRSI) was established in 1994 under the auspices of the Alaska Native/Rural Education Consortium, representing over 50 organizations impacting education in rural Alaska. AKRSI's institutional homebase and support structure are provided by the Alaska Federation of Natives in cooperation with the University of Alaska, with funding from the National Science Foundation and the Annenberg Rural Challenge. AKRSI aims to implement a set of initiatives that systematically document the indigenous knowledge systems of Alaska Native people and develop pedagogical practices integrating indigenous knowledge and ways of knowing into all aspects of education. In practical terms, the most important objective is increased recognition of the complementary nature of Native and Western knowledge, so both can be utilized more effectively as a foundation for the school curriculum. This paper provides brief overviews of the demographic and economic context of rural Alaska, the recent history of rural schools in Alaska, and the development of AKRSI. Five sets of science and math initiatives and five sets of language and culture initiatives are implemented on a 5-year rotational schedule in each of five cultural regions of Alaska (Yup'ik, Inupiaq, Athabascan, Aleut, and Southeast regions). Twelve key AKRSI-sponsored activities are briefly described. (SV)

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Educational Renewal In Rural Alaska

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Abstract

This workshop will provide an overview of the Alaska Rural Systemic Initiative, a five-year effort that has been established through the Alaska Federation of Natives and the University of Alaska with funding from the National Science Foundation to assist schools throughout rural Alaska to integrate Alaska Native knowledge, ways of knowing and world views into all aspects of rural education. Discussion will include a description of the epistemological basis for the project, the organizational structure being utilized, the role of the community, and the cultural documentation process involved, as well as the implications for curriculum development, teaching, and support structures for village schools.

The Alaska Rural Systemic Initiative was established in 1994 under the auspices of the Alaska Native/Rural Education Consortium, representing over 50 organizations impacting education in rural Alaska. The institutional homebase and support structure for the AKRSI is provided through the Alaska Federation of Natives in cooperation with the University of Alaska, with funding from the National Science Foundation and the Annenberg Rural Challenge. The purpose of the Alaska Rural Systemic Initiative is to implement a set of initiatives that systematically document the indigenous knowledge systems of Alaska Native people and develop pedagogical practices that appropriately integrate indigenous knowledge and ways of knowing into all aspects of education. In practical terms, the most important intended outcome is an increased recognition of the complementary nature of Native and western knowledge, so both can be more effectively utilized as a foundation for the school curriculum and integrated into the way we think about learning and teaching.

For any significant initiative aimed at improving education in rural Alaska, it is essential that we develop from the outset a working partnership of mutual respect and understanding between the Native and educational communities. The history of contradictions, confusion and conflict resulting from the coming together of two often incompatible cultural traditions and belief systems can best be overcome by drawing together the available expertise from each and exploring ways to arrive at an equitable synthesis. The first step in this endeavor was a series of colloquia on "Alaska Native Science Education" held in April, 1992 and May, 1993, sponsored by the Alaska Federation of Natives and the University of Alaska Fairbanks, with funding provided by the National Science Foundation. Topical areas that were addressed by the 60 broadly representative participants in the colloquia included Native scientific traditions, western scientific traditions, science practices in various community and institutional settings, science curricula in schools and universities, science teaching practices, and science teacher training opportunities. Out of these discussions, an extensive set of recommendations were put forward regarding steps to be taken to improve the quality of science education, and education generally, for Alaska Native people. These recommendations then served as the impetus for the formation of the Alaska Native/Rural Education Consortium, as well as the basis for the initiatives that make up the AKRSI reform strategy. To help put these interrelated issues into perspective, it is necessary to provide a brief overview of the geographical and political context in which the AKRSI initiatives were formed and are now being implemented.

Rural Alaska

By most any standards, nearly all of the 586,000 square miles and 245 communities that make up the state of Alaska would be classified as "rural." Approximately 40% of the 600,000+ people living in Alaska are spread out in 240 small, isolated communities ranging in size from 25 to 5000, with the remaining 60% concentrated in a handful of "urban" centers. Anchorage, with approximately 50% of the total population, is the only potential metropolitan area in the state. Of the rural communities, over 200 are remote, predominantly Native (Aleut, Eskimo and Indian) villages in which 70% of the 90,000 Alaska Natives live. The Alaska Department of Labor estimates the Native population will grow to 108,700 by the year 2000. The vast majority of the Native people in rural Alaska continue to rely on subsistence hunting and fishing for a significant portion of their livelihood, coupled with a slowly evolving cash-based economy, though few permanent jobs exist in most communities. According to a 1990 survey, the percentage of people living in "poverty" in rural communities in Alaska ranges from 15% to 57%, with the average income in the $7,000 to $15,000 range.

Rural Schools

Prior to 1975, the schools in rural Alaska were administered by either the federal Bureau of Indian Affairs or the Alaska State-Operated School System, both centrally administered systems oriented toward bringing Alaska Natives into mainstream society as their primary goal. The history of inadequate performance by the two

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school systems, coupled with the ascendant economic and political power of Alaska Natives that derived from the passage of the Alaska Native Claims Settlement Act by the U.S. Congress in 1971, led to the dissolution of the centralized systems in the mid-1970's and the establishment of 21 locally controlled regional school districts to take over the responsibility of providing education in rural communities. At the same time, a class-action lawsuit brought against the State of Alaska on behalf of rural Alaska Native secondary students led to the creation of 126 village high schools to serve those rural communities where high school students had to leave home previously to attend boarding schools.

Although the creation of the regional school districts (along with several single-site and borough districts) and the village high schools has provided rural communities with an opportunity to exercise a greater degree of political control over the educational systems operating in rural Alaska, it did not lead to any appreciable change in what is taught and how it is taught in those systems. The continuing inability of schools to be effectively integrated into the fabric of many rural communities after over 20 years of local control points out the critical need for a broad-based systemic approach to addressing educational conditions in rural Alaska.

Forging an Emergent System of Education for Rural Alaska

In May, 1994 the Alaska Natives Commission, a federal/state task force that had been established two years earlier to conduct a comprehensive review of programs and policies impacting Native people, released a report articulating the critical importance of any effort aimed at addressing Alaska Native issues needing to be initiated and implemented from within the Native community. The long history of failure of external efforts to manage the lives and needs of Native people made it clear that outside interventions were not the solution to the problems, and that Native communities themselves would have to shoulder a major share of the responsibility for carving out a new future. At the same time, existing government policies and programs would need to relinquish control and provide latitude for Native people to address the issues in their own way, including the opportunity to learn from their mistakes. It is this two-pronged approach that is at the heart of the Alaska Rural Systemic Initiative educational reform strategy -- Native community initiative coupled with a supportive, adaptive, collaborative education system.

This strategy requires that we focus our attention on both the formal education system and the indigenous knowledge systems in rural Alaska. The culture of the formal education system as reflected in rural schools is poised to undergo significant change, with the main catalyst being standards-based curriculum grounded in the local culture. In addition, the indigenous knowledge systems need to be documented, articulated and validated, again with a major catalyst being standards-based curriculum grounded in the local culture. With these catalysts in mind, we have sought to implement a series of initiatives that stimulate the emergent properties of self-organization that are needed to produce the kind of systemic integration indicated above. To do so, it is essential that we work through and within the existing systems.

Our challenge has been to identify the units of change that will produce the most results with the least effort. That has meant identifying and targeting the elements of the system around which a renewed emergent order can coalesce. Once these critical agents of change have been appropriately identified, a "gentle nudge" in the right places can produce powerful changes throughout the system. With these considerations in mind, the overall structure of the Alaska Rural Systemic Initiative has been organized around the following sets of initiatives (five funded by NSF focusing on math and science, and five funded by ARC focusing on social studies and language arts). Each of these initiatives is being implemented in one of the five major Alaska Native cultural regions each year on an annual rotational scale-up schedule over a five-year cycle. In this way, the initiatives can be adapted to the cultural and geographic variability of each of the regions, while at the same time engaging the state-level support structures throughout the five-year cycle.

Along with the rotational schedule of regional initiatives, there are also a series of cross-cutting themes that integrate the initiatives within and across regions each year. While the regional initiatives focus on particular domains of activity through which specialized resources are brought to bear in each region each year (culturally aligned curriculum, indigenous science knowledge base, etc.), the following themes cut across all initiatives and regions each year:

- Documenting cultural/scientific knowledge
- Indigenous teaching practices
- Standards/culturally-based curriculum
- Teacher support systems
- Appropriate assessment practices

In this way, schools across the state are engaged in common endeavors that unite them, at the same time that they are concentrating on particular initiatives in ways that are especially adapted to their respective cultural region. Each set of initiatives and themes build on each other from year to year and region to region through a series of statewide events that bring participants together from across the regions. These include working groups around various themes, Academies of Elders, statewide conferences, the AN/RE Consortium meetings, the Alaska

Native Science Education Coalition and the Alaska Native Knowledge Network.

The key agents of change around which the AKRSI educational reform strategy has been constructed are the Alaska Native educators working in the formal education system coupled with the Native Elders who are the culture-bearers for the indigenous knowledge system, along with the Quality Schools Initiative and content standards adopted by the Alaska Department of Education. Together, these agents of change constitute a considerable catalytic force that is serving to reconstitute the way people think about and do education in rural schools throughout Alaska. The role of the Alaska Rural Systemic Initiative has been to guide and support these agents through an on-going array of locally-generated, self-organizing activities that produce the "organizational learning" needed to move toward a new form of emergent and convergent system of education for rural Alaska. The overall configuration of this emergent system may be characterized as two interdependent though previously separate systems being nudged together through a series of initiatives maintained by a larger system of which they are constitutent parts, as illustrated in the following diagram:

The components of the emergent system representing the indigenous knowledge sub-system and the formal education sub-system are depicted here as they appear today, two years into the systemic reform initiative. Over the first two years, the two sub-systems have been brought in contact with one another with an increasing level of two-way interaction occurring daily that is slowly building the interconnectivity and complementarity of functions that is the goal of the reform strategy. Each of the initiatives in the field surrounding the two sub-systems serve as a catalyst to energize the sub-systems in ways that reinforce the efforts of the agents of change identified previously. For example, the Alaska Native Knowledge Network assembles and provides easy access to curriculum resources that support the work underway on behalf of both the indigenous knowledge system and the formal education system. In addition, the ANKN newsletter, *Sharing Our Pathways*, provides an avenue for on-going communication between all elements of the constituent systems. Concurrently, the AKRSI is collaborating with the Alaska Department of Education in bringing Native/science teachers together to develop performance standards based on the state content standards that take into consideration the cultural context in which students acquire and demonstrate their knowledge. These performance standards will then become part of the states performance assessment system to be implemented in all schools.

Together, these initiatives (along with other related activities) constitute the Alaska Rural Systemic Initiative and are intended to generate a strengthened complex adaptive system of education for rural Alaska that can effectively integrate the strengths of the two constituent emergent systems. The exact form this new integrated system will take remains to be seen as its properties emerge from the work that is underway. Accepting the openendedness and unpredictability associated with such an endeavor, and relying on the emergent properties associated with the adage, "think globally, act locally," we are confident that we will know where we are going when we get there. It is the actions associated with each of the initiatives that will guide us along the way, so that we continue to move in the direction established by the AKRSI educational reform strategy.

Intervention Activities: An Overview

Following is a brief description of some of the key AKRSI-sponsored initiatives to illustrate the kind of activities that are underway, as they relate to the overall educational reform strategy outlined above.

Alaska Native Knowledge Network - A bi-monthly newsletter, world wide web site (http://www.uaf.alaska.edu/ankn), and a culturally-based curriculum resources clearinghouse have been established to disseminate the information and materials that are being developed and accumulated as the AKRSI initiatives are implemented throughout rural Alaska.

S.P.I.R.A.L. Curriculum Framework - The ANKN curriculum clearinghouse is identifying and cataloging curriculum resources applicable to teaching activities revolving around 12 broad cultural themes organized on a chart that provides a "Spiral Pathway for Integrating Rural Alaska Learning." The themes that make up the S.P.I.R.A.L. framework are family, language/communication, cultural expression, tribe/community, health /wellness, living in place, outdoor survival, subsistence, ANCSA, applied technology, energy/ecology, and exploring horizons. The curriculum resources associated with each of these themes can be accessed through the ANKN website.

Cultural Documentation/Atlas - Students in rural schools are interviewing Elders in their communities and researching available documents related to the indigenous knowledge systems, and then assembling the information they have gathered into a multimedia format for publication as a "Cultural Atlas" on CD-ROM and the Internet. Documentation has focused on themes such as weather prediction, edible and medicinal plants, geographic place names, flora and fauna, moon and tides, fisheries, subsistence practices, food preservation, outdoor survival and the aurora.

Native Educator Associations - Associations of Native educators have been formed in each cultural region to provide an avenue for sustaining the initiatives that are

being implemented in the schools by the AKRSI. The regional associations sponsor curriculum development work, organize Academies of Elders and host regional and statewide conferences as vehicles for disseminating the information that is accumulated.

Native Ways of Knowing - Each cultural region is engaged in an effort to distill core teaching/learning processes from the traditional forms of cultural transmission and to develop pedagogical practices in the schools that incorporate these processes (e.g., learning by doing/experiential learning, guided practice, detailed observation, intuitive analysis, cooperative/group learning, listening skills).

Academies of Elders - Native educators are convening with Native Elders around a local theme and a deliberative process through which the Elders share their traditional knowledge and the Native educators seek ways to apply that knowledge to teaching various components of the standards-based curriculum. The teachers then field test the curriculum ideas they have developed, bring that experience back to the Elders for verification, and then prepare a final set of curriculum units that are pulled together and shared with other educators.

Cultural Standards - A set of "Alaska Standards for Culturally Responsive Schools" have been developed for students, teachers, curriculum, schools and communities that provide explicit guidelines for ways to integrate the local culture and environment into the formal education process so that students are able to achieve cultural well-being as a result of their schooling experience.

Village Science Curriculum Applications - Three volumes of village oriented science curriculum resources are being developed in collaboration with rural teachers for use in schools throughout Alaska. They will serve as a supplement to existing curriculum materials to provide teachers with ideas on how to relate the teaching of basic science and math concepts to the surrounding environment.

AISES Chapters/Native Science Fairs - K-12 chapters of the American Indian Science and Engineering Society are being formed in rural districts serving each cultural region. These chapters are participating in AISES Science Camps and are sponsoring Native Science Fairs in which the projects are judged for their science content by experienced science teachers and for their cultural content by Native Elders. The winners of the regional fairs attend the national AISES Science Fair in the Spring.

Alaska Native Science Education Coalition - The ANSEC is made up of representatives from over 20 agencies, professional organizations and other programs that have an interest and role in science and math education in rural Alaska schools. The Coalition is seeking to bring its vast array of curriculum and professional development resources into focus around the implementation of standards/ culturally-based science curriculum, including the incorporation of rural/cultural considerations in the Coalition members own materials and practices (e.g., Alaska Science Consortium workshops, Project Wild curriculum materials, National Park Service interpretive programs).

Math/Science Unit-building Workshops - Under the sponsorship of the ANSEC, small regional teams of science teachers, Native teachers, Elders and scientists (each of whom learn from the others) are assembled for two days of concentrated work aimed at building science and math curriculum units around a locally identified theme that can serve as a focus for meeting state content standards starting from a knowledge base grounded in the local environment (e.g., weather, food preservation, moon/tides, birch trees, berries, measuring systems). The units are then field tested by the participating teachers, refined and made available to teachers throughout the state as models for an on-going process of standards-based and culturally-grounded curriculum development.

Math/Science Performance Standards - Performance standards in the areas of math and science are being developed that will serve as benchmarks for the state assessment system in those content areas. Through AKRSI support, representation from rural/Native communities is helping to incorporate the various cultural and geographic perspectives needed to provide equity in the assessment process.

Are We Making a Difference?

As the Alaska Rural Systemic Initiative approaches the midpoint of its five-year trajectory, preliminary data from the districts we are working with indicate that the educational reform strategy we have chosen -- to foster interconnectivity and complementarity between the formal education system and the indigenous communities being served in rural Alaska -- has produced an increase in student achievement scores, a decrease in the dropout rate, an increase in the number of rural students attending college, and an increase in the number of Native students choosing to pursue studies in fields of science, math and engineering. The initiatives outlined above have demonstrated the viability of introducing strategically placed innovations that can serve as catalysts around which a new, self-organizing, functionally-integrated educational system can emerge which shows signs of producing the quality of learning opportunity that has eluded schools in Native communities for over a century. The substantial realignments that are already evident in the increased interest and involvement of Native people in education in rural communities throughout Alaska point to

the efficacy of a systemic approach in shaping reform in educational systems.

While the NSF funding of the Alaska RSI initiative has been the catalyst for the core reform strategy, we have been fortunate to acquire substantial supplementary funding to address areas for which the RSI funds were not suitable, such as indigenous curriculum materials development (from the NSF Division of Instructional Materials Development), and implementing comparable initiatives to those of AKRSI in the areas of social studies, fine arts and language arts (from the Annenberg Rural Challenge). All of these funds combined provide an opportunity to address the issues facing schools in Native communities throughout rural Alaska in a truly comprehensive and systemic fashion.

As a means to help document the process of systemic reform in rural schools, we have joined in two projects that will result in comprehensive case studies of educational practices and reform efforts in nine rural communities/schools in Alaska, to be conducted over a period of three years. Seven of the case studies are funded through the Northwest Regional Educational Laboratory by a field-initiated grant from the National Institute for At-Risk Youth under USDOE, and the other two are being administered by Harvard University through a grant from the Annenberg Foundation. Since all of the communities are in school districts associated with the Alaska Rural Systemic Initiative, we will be able to obtain a good cross-section of in-depth data on the impact of the RSI reform effort over the next few years.

We are mindful of the responsibilities associated with taking on long-standing, intractable problems that have plagued schools in indigenous settings throughout the world for most of this century, and we have made an effort to be cautious about raising community expectations beyond what we can realistically expect to accomplish. We are also mindful of the larger context in which the AKRSI operates and the expectations of the funding agencies with mandates to support initiatives that can contribute to a larger national agenda. Our experience thus far is such that we are confident in the route we have chosen to initiate substantive reforms in rural schools serving Alaska's Native communities, and while we expect to encounter plenty of problems and challenges along the way, we are capitalizing on a broadly supportive climate to introduce changes that will benefit not only rural schools serving Native students, but will be instructive for all schools and all students. We welcome the opportunity to continue to explore these ideas and find ways to strengthen and renew the educational systems serving people and communities throughout our society.

NSF/ARC Combined Yearly Cycle of Activities by Cultural Region

NSF						Annenberg
Rural Systemic Initiative/Year (1995-2000)	**1995-96**	**1996-97**	**1997-98**	**1998-99**	**1999-2000**	**Rural Challenge Initiative/Year** (1996-2000)
Native Ways of Knowing/Teaching	Yup'ik Region	Inupiaq Region	Athabascan Region	Aleut/Alut. Region	Southeast Region	**ANCSA and the Subsistence Econ.**
Culturally Aligned Curriculum	Southeast Region	Yup'ik Region	Inupiaq Region	Athabascan Region	Aleut/Alut. Region	**Language/ Cultural Immersion Camps**
Indigenous Science Knowledge Base	Aleut/Alut. Region	Southeast Region	Yup'ik Region	Inupiaq Region	Athabascan Region	**Oral Tradition as Education**
Elders and Cultural Camps	Athabascan Region	Aleut/Alut. Region	Southeast Region	Yup'ik Region	Inupiaq Region	**Reclaiming Tribal Histories**
Village Science Applications	Inupiaq Region	Athabascan Region	Aleut/Alut. Region	Southeast Region	Yup'ik Region	**Living in Place**

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